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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/044,490 | 01/09/2002 | Yuki Nakamura | 2271/66507 | 9287 |

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| EXAMINER | |
|---|---|
| ANGEBRANNDT, MARTIN J | |
| ART UNIT | PAPER NUMBER |
| 1756 | |

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/044,490 | NAKAMURA ET AL. | |
| | Examiner | Art Unit | |
| | Martin J. Angebranndt | 1756 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *21,24,27,30,33,36,39,42 and 44-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,24,27,30,33,36,39,42,44-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed. The claims are now limited to AgInTeSb recording layers.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yamada et al. EP 0717404.

Examples 2 and 3 in table 2 have the compositions shown in tables 2 as the recording layer in media comprising a polycarbonates substrate, a 200 nm $ZnS\text{-}SiO_2$ lower dielectric layer, a 25 nm AgInTeSb ecording layer, a 30 nm $ZnS\text{-}SiO_2$ upper dielectric layer, a 100 nm Al alloy reflective layer and a 5 micron UV cured resin as the protective layer. The sum of the Te and Sb are 91 and 85.4 % respectively. Comparative examples 1 and 2 use the same structure and meet

the limiations of the claims. (table 2, cont). The sum of the Te and Sb are 99.5 and 95.9 % respectively. The benefits of adding 2% nitrogen is illustrated in table 3 on page 12. The addition of Ti, Cr or Si to the reflective layer is disclosed. (8/29-31).

With respect to claims 21,24,27,30,33,36,39 and 42, the examiner notes that all the media cited have been initialized and that these initializations are equivalent to that recited in the claims and that the applicant has the burden of proving otherwise through testing and the presentation of declaration evidence as set forth in MPEP 2113 as the claims are directed to products by process. The applicant argues that they have found through extensive experimentation, that the when powers above 1000 $J/m^2$ are used, the media have high jitter. **The examiner notes that the extensive data referred to corresponds to the 25 tests in example 24 (table 4) only corresponds to a single medium with an AgInTeSb alloy layer and a specific layered structure. The examiner notes that at least some of the media described in the reference have excellent disc characteristics including C/N > 55 dB and erasability < -35 dB. (page 9) The showing by the applicant is nowhere near the scope of coverage sought. The rejection stands.**

**The applicant is claiming the medium in a product by process format, therefore contrary to the position of the applicant, a reasonable assertion by the examiner, based in part upon the properties of the media reported in the prior art for the media of the of the prior art, that the media of the prior art and the claimed media are the same places the burden firmly upon the applicant to show that the process of the prior art does not result in media within the scope of the coverage sought. There is no requirements in MPEP 2113 that the exact process used be the same. Phase change recording media are conventionally**

**initialized in the art prior to use. The appluicant's characterization of the reference's teachings (as well as those of the other references applied) through mere restatement of the abstract is nowhere near a reasonable treatment of the complete teachings of the reference. The rejection stands.**

5. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yamada et al. EP 0735158.

Examples 3, 5-7 comparative example 2 and 3 in table 2 have the compositions shown in tables 2 as the recording layer in media comprising a polycarbonates substrate, a 200 nm ZnS-$SiO_2$ lower dielectric layer, a 25 nm recording layer, a 30 nm ZnS-$SiO_2$ upper dielectric layer, a 100 nm Al alloy containing 1 % Si as the reflective layer and a 10 micron UV cured resin as the protective layer. The sum of the Te and Sb are 85.5, 92,9291 and 94.5 % respectively. Example 10 in table 2 on page13 also includes nitrogen. The addition of various elements to the recording layer is disclosed. (7/48-52). The use of various alloys of Al, Au, Ag and Cu are disclosed. (9/26-27)

In addition to the arguments above, the examiner notes that example 10 undergoes 15,000 overwrites before experiencing a sudden increase in jitter (13/47), similarly examples 3 and 5-7 are useful with 7,000, 10,000, 8,000 and 10,000 overwrites before the jitter increases. The rejections stand.

6. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Iwasaki et al. JP 03-240590.

See examples E and F in table 1 (page 5), which do not seem to have an increase in C/N or jitter after 10,000 overwrites.

See the response above as no further arguments have been directed at this rejection.

7. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Iwasaki et al. JP 04-078031.

See examples E and F in table I-1 (page 7), which do not seem to have an increase in C/N or jitter after 10,000 overwrites.

See the response above as no further arguments have been directed at this rejection.

8. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yuzurihara et al. JP 11-070737.

Examples 21,24 and 26-29 in tables 2 and 3 have the compositions shown in these tables as the recording layer in media comprising a polycarbonates substrate, a 170 nm $ZnS\text{-}SiO_2$ lower dielectric layer, a 18 nm recording layer, a 20 nm $ZnS\text{-}SiO_2$ upper dielectric layer, a 120 nm Al alloy containing Ti as the reflective layer and a UV cured resin as the protective layer. The sum of the Te and Sb are 90.4 for example 21and 89.2 % for the others. Note that addition of nitrogen to the recording layers in examples 27-29.

Note in examples example 21 is able to be used for 21,000 overwrites and example 18 is useful for 35,000 overwrites before jitter increases.

See the response above as no further arguments have been directed at this rejection.

9. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Miura et al. JP 2002-002116.

See examples 8 and 22 in table 1 on page 7.

See the response above as no further arguments have been directed at this rejection.

10. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Miura et al. '121.

See examples 8 and 22 in table 1 on page 7.

See the response above as no further arguments have been directed at this rejection.

11. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohno et al. EP 0847049.

Example 5 is an AgGeSbTe optical recording medium which uses a 250 mW (mJ/sec) beam at a linear velocity of 2.5 m/s based upon the data in the applicant's table 4, this would have an irradiation of less than 1000 $J/m^2$. Example 6 uses the same 250 mW beam at a linear velocity of 4.5 m/s. Example 7 uses a 400 mW beam with a rotation of 2,700 RPM. The beam is described as an oval with dimensions of 2 x 50 microns, which yields an area of 314 sq. microns ($3.14 \times 10^{-10}$ $m^2$) . (19/17-20). For example 5 the exposure energy of the irradiation of a spot corresponds to the residence time of the beam at that point (energy x time) for the beam having a long axis of 50 microns ($5 \times 10^{-5}$ m) with the media rotating at a linear velocity of 2.5 m/s yields a residence time of $2.0 \times 10^{-5}$ sec. The exposure energy of the beam in joules/$m^2$ is (($250 \times 10^{-3}$ W x 2.5 x $10^{-}$ Sec)/ $3.14 \times 10^{-10}$ $m^2$) yields 15,923 $J/m^2$ assuming no losses. If we were to assume similar losses to those of the applicant's calculations then the exposure is 530 $J/m^2$ at the irradiated spot. For example 6, the calculations yield 8,846 $J/m^2$. The examiner holds the position, congruent with the applicants calculations, that the power at the spot is less than 600 $J/m^2$ due to losses in the optical train.

The applicant's arguments are that over initialization is a problem, which results in jitter. In the cited reference, the media are described as initialized by low laser powers. The applicant's

table shows that for velocities of 5 m/s, the use of 330 mW yields 660 J/m$^2$. Using the velocities and power of the beam in the reference and interpolating yields 960 J/m$^2$. The applicant bears the responsibility of showing the criticality of the power for all the media bounded by the scope of coverage sought. **The area of the applicant's beam in [0210] is the same, although the dimensions are 1 x 100 microns. Using the data from table 4, the in same treatment of the data as above yields 21,019 J/m$^2$ [based upon (330 x $10^{-3}$ W x ((100 x $10^{-6}$ m)/(5 m/s))/3.14 x $10^{-10}$ m$^2$)] yet the applicant reports E in table 4 for P = 330 mW and V = 5 m/s to be 660 J/m$^2$ which is 30 times less.** ***It appears that the applicant is accounting for losses in the optical train, but this is not discussed in the instant application*** **The applicant is invited to show the error on the part of the examiner. The applicant's arguments that no data is shown is entirely without merit as evidenced by the calculations provided above based upon the data provided in the reference.**

12. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohno et al. 310.

Example 5 is an AgGeSbTe optical recording medium which uses a 250 mW beam at a linear velocity of 4.5 m/s based upon the data in the applicant's table 4, this would have an irradiation of less than 1000 J/m$^2$. Example 8 uses a 300 mW beam at a linear velocity of 4.5 m/s. Example 10 uses a 400 mW beam with a rotation of 2,700 RPM.

The applicant's arguments are that over initialization is a problem, which results in jitter. In the cited reference, the media are described as initialized by low laser powers. The applicant's table shows that for velocities of 3 m/s, the use of 330 mW yields 1100 J/m$^2$. Using the velocities and power of the beam in the reference yields 534 J/m$^2$. The applicant bears the

responsibility of showing the criticality of the power for all the media bounded by the scope of coverage sought. The rejection stands for the reasons above.

13. Claims 21,24,27,30,33,36,39 and 42 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Tominaga et al. '157.

Example 1B is an AgGeSbTe optical recording medium which uses a 8 mW beam at a linear velocity of 3 m/s based upon the data in the applicant's table 4, this would have an irradiation of less than 1000 $J/m^2$. The dimensions of the beam are not provided, but for that velocity (3 m/s), the exposure energy is almost two orders of magnitude below those described by the applicant. Assuming the worst case of a long beam of 1 x 100 microns, which has the longest residence time for the unit area exposed yields 849.3 $J/m^2$ assuming no losses.

The applicant bears the responsibility of showing the criticality of the power for all the media bounded by the scope of coverage sought.

14. Claims 21,24,27,30,33,36,39,42 and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over **either one of** Yamada et al. EP 0717404, Yamada et al. EP 0735158, Iwasaki et al. JP 03-240590 **or** Yuzurihara et al. JP 11-070737, **in view of** Ando et al. '175 and either of Suzuki et al. EP 1111598 or Suzuki et al. '780.

Ando et al. '175 describes the embossing of data relating to disk size, read out rate, recording density, serial numbers, linear velocity conditions, read power, peak power, base power and manufacture information (15/55-16/9)

Suzuki et al. EP 1111598 teach the determination of the performance characteristics of an optical recording medium including the optimum recording power [0021] and the sensitivity of

the medium (gamma) [0016]. The use of both of these allows a range of useful laser powers and prevents selection of an improper laser power. [0021].

Suzuki et al. '780 teach the determination of the performance characteristics of an optical recording medium including the optimum recording power (abstract and 4/53+) and the sensitivity of the medium (gamma) (3/3-35 and 4/12-5/59). The use of both of these allows a range (margin) of useful laser powers and prevents selection of an improper laser power. (4/12-5/59.

To support the assertion that embossing information relative to the performance characteristics of the optical recording media would have been obvious, the examiner cites Ando et al. '175 which teaches the provision of control data and specification data for the optical recording medium in a non-write-able portion of the medium and Suzuki et al. EP 1111598 or Suzuki et al. '780 which describe specific methods of characterizing the performance and holds that it would have been obvious to one skilled in the art to modify the media of **either one of** Yamada et al. EP 0717404, Yamada et al. EP 0735158, Iwasaki et al. JP 03-240590 **or** Yuzurihara et al. JP 11-070737 by adding performance data such as that described by either of Suzuki et al. EP 1111598 or Suzuki et al. '780 to prevent improper choice of laser powers and to provide this as embossed information as described by Ando et al. '175 to allow the user for forgo the optimization process.

The applicants arguments neglects to recognize that the values of R and S actually correspond to real parameters in the recording process, but these values are not recorded in the medium as the values of $P_t$ and $P_o$ are, but are chosen when writing to the medium. These really limit the process of use, not the medium as they are never written into the medium.

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

06/28/2005